L-152

PASTURE FERTILIZATION

Albert W. Crain, Associate Pasture Specialist

WHY FERTILIZING IS NECESSARY. A ton of grass hay contains approximately 30 pounds of nitrogen (N), 10 pounds phosphoric acid (P_2O_5), and 30 pounds of potassium (K_2O); or the equivalent of 100 pounds ammonium nitrate, 50 pounds 20% superphosphate and 50 pounds 60% muriate of potash. A ton of legume hay contains about 25% more N, P and K than grass hay. The amount of fertilizer to apply will therefore be influenced by the amount of forage needed, the species in the pasture and the amount of moisture available.

It requires about 4 acre-inches of water to produce a ton of grass hay and about 6 acre-inches to produce a ton of legume hay. Therefore, plant food should be applied to pastures in accordance with expected rainfall as well as soil and plant needs. If nitrogen, phosphate or other plant food is deficient, plants make inefficient use of water. More forage of better quality is produced with less water when plenty of plant food is available.

Another factor to consider is that an animal (1000-pound cow or equivalent) will consume a ton of hay in 100 days (1 cow, 1 ton, 100 days). You can estimate the yield per acre and thus you can judge the acreage needed per animal. A cow (or equivalent) thus consumes about 3½ tons of hay annually and this is equivalent to 3½ sacks of ammonium nitrate, 2 sacks superphosphate and 2 sacks of muriate of potash.

PERENNIAL PASTURES as bermuda or dallis with white clover, lespedeza or other perennial or reseeding annual pasture plants require a soil well supplied with all three of the major nutrients, N, P, and K. Such pastures should be fertilized in such a way as to insure adequate quantities of all of these. The fertilizer should be applied in the fall or winter at the time of renovation or cultivation.

If you have a good mixture of a grass and a legume then do not put off fertilizing until one or the other begins to disappear and weeds come in. Renovate frequently and fertilize to maintain a good cover and growth.

In grass pastures and meadows, additional nitrogen should be applied during the spring and summer to stimulate growth and improve quality of forage — primarily an increase in protein.

SUMMER SUPPLEMENTAL PASTURES such as sweet sudan, sweet sudan and Chinese red cowpeas mixed, need minerals as well as nitrogen. If they follow a winter legume properly fertilized, then the only need for the summer supplemental pasture will likely be nitrogen top-dressing. If not following a winter legume properly fertilized, then they likely need nitrogen, phosphorus, potash, lime, or mixtures of two or more of these at time of planting with additional nitrogen side-dressing if planted in rows or top-dressed if broadcast.

WINTER SUPPLEMENTAL PASTURES such as Hubam, crimson or Madrid clover, vetch, or Singletary peas with a small grain (oats or rye or wheat or barley) may need a complete fertilization at planting time with nitrogen top-dressing in the early spring.

SUGGESTIONS ON APPLICATION. Fertilizers containing phosphorus or potash or both should be applied before planting **supplemental pastures** and worked into the soil. On **perennial pastures,** the best time to apply lime and fertilizer is in the fall or winter. Renovation of the pasture should accompany fertilizer application. The amount used per acre on perennial pastures should be sufficient to last for 3 or 4 years on clays and loams; one or two years on sands.

Nitrogen applications to turf, sod or broadcast crops is as effective if applied on the surface as drilled or worked into the soil. Anhydrous ammonia on pastures is a satisfactory source of nitrogen, but it must be placed in the soil. Nitrogen should be used only when there is adequate moisture in the soil for growth. When nitrogen fertilizers are applied, there should be no dew or free water on the above parts of the plants. It is not advisable generally to apply more than 30 pounds of nitrogen at any one application. Several applications can be made annually.

INDICATORS OF NEED FOR FERTILIZER OTHER THAN SOIL TEST include such things as encroachment of weeds, pale yellowish color of grasses, brown spots or streaks on legume leaves and lack of growth, or weak growth. In a grass-legume mixture the disappearance of the grass or the legume generally indicates the loss of or need for one or more nutrients. These things are good indicators of fertilizer needs if disease on the plants or poor grazing management are not factors.

Weeds. Poverty grass, broomsedge, and other low fertility grasses and weeds come into pastures because there isn't enough plant food in the soil for the better grasses such as bermuda or dallis to grow and produce. A pale yellowish green color indicates **nitrogen starvation** (not drouth). In sorghum or corn for example, when the lower leaves begin to turn yellow (before maturity) the plants need nitrogen. They need water only if the top leaves (youngest) near the head or tassel wilt and fold up. Corn and sorghum are grasses and react exactly like your pature grasses.

Brown spots or streaks on legume leaves generally is a result of a mineral deficiency in the soil. **The need for lime** (calcium) to sweeten the soil or provide calcium for growth is best determined by soil test but the absence of clovers or lack of growth of them may indicate the need in East Texas bottoms and sandy soils. In areas of limited rainfall nitrogen and phosphorus (as well as water, sometimes) are limiting factors on pastures. In a grass-legume mixture the legumes will likely dominate if the soil is low in nitrogen and all minerals are high. The legumes will tend to disappear if minerals such as phosphate, lime or potash are needed in the soil. Grass in a good mixture of a grass and a legume can be stimulated by nitrogen application.

PASTURES ARE A CASH CROP — TREAT THEM AS SUCH!

Issued By
The Agricultural Extension Service
The Texas A. & M. College System and
The United States Department of Agriculture
G. G. Gibson, Director, College Station, Texas

Cooperative Extension Work in Agriculture and Home Economics, The Texas A. and M. College System and United States Department of Agriculture Cooperating. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914.
25M—9-51, Revised